

HRRS 5kV and 10kV Series

High-voltage, high-performance, high-resistance decade substituter for all laboratory, test, and calibration needs.

Features:

- High accuracy - to .01%
- High stability - to 10 ppm/yr
- Excellent TC - as low as 5 ppm/°C
- Low current solid silver alloy contact switches
- Resistance from 10 Ω to 1 T Ω +
- Low voltage coefficient - as low as 0.2 ppm/V
- Rack mounting available
- Special and custom configurations available



HRRS 7-Decade High-Voltage Substituter

See also:

- High-power: **HPRS Series**
- Higher-accuracy: **HARS-X** and **HARS-LX Series**
- Economical version: **HRRS Series**
- RTD simulators: **RTD Series** -- without zero subtraction
- Programmable models: **PRS Series**

SPECIFICATIONS

Resistance per step	Total decade resistance	Accuracy ** 18-28°C; <50% RH			HRRS-5kV		HRRS-10kV		Temperature coefficient ($\pm$ ppm/°C)	Voltage coefficient ($\pm$ ppm/V)	Stability ($\pm$ ppm/yr)	Resistor type
		Q	B	F	Max voltage per step (V)	Maximum voltage (V)	Max voltage per step (V)	Maximum voltage (V)				
10 Ω	100 Ω	$\pm(0.01\%+2 \text{ m}\Omega)$	$\pm(0.03\%+2 \text{ m}\Omega)$	$\pm(0.10\%+2 \text{ m}\Omega)$	2.5	25	2.5	25	15	-	10	Wirewound, non-inductive
100 Ω	1 k Ω	$\pm(0.01\%+2 \text{ m}\Omega)$	$\pm(0.03\%+2 \text{ m}\Omega)$	$\pm(0.10\%+2 \text{ m}\Omega)$	8	80	8	80	5	-	10	
1 k Ω	10 k Ω	$\pm 0.01\%$	$\pm 0.03\%$	$\pm 0.10\%$	23	230	23	230	5	-	10	
10 k Ω	100 k Ω	$\pm 0.01\%$	$\pm 0.03\%$	$\pm 0.10\%$	70	700	70	700	5	-	10	
100 k Ω	1 M Ω	$\pm 0.01\%$	$\pm 0.03\%$	$\pm 0.10\%$	230	2300	230	2300	5	-	10	
1 M Ω	10 M Ω	$\pm 0.01\%$	$\pm 0.03\%$	$\pm 0.10\%$	1000	5000	1000	10,000	15	<1	25	High-voltage film
10 M Ω	100 M Ω	$\pm 0.03\%$	$\pm 0.10\%$	$\pm 1\%$	5000	5000	5000 (*10,000)	10,000	25	<1	50	
100 M Ω	1 G Ω	$\pm 0.10\%$	$\pm 0.20\%$	$\pm 1\%$	5000	5000	10,000	10,000	25	1	100	
1 G Ω	10 G Ω	$\pm 0.20\%$	$\pm 0.50\%$	$\pm 1\%$	5000	5000	10,000	10,000	25	1	500	
10 G Ω	100 G Ω	$\pm 0.50\%$	$\pm 1\%$	$\pm 1\%$	5000	5000	10,000	10,000	25	2	500	
100 G Ω	1 T Ω	$\pm 0.50\%$	$\pm 1\%$	$\pm 1\%$	5000	5000	10,000	10,000	100	5	500	
1 T Ω	10 T Ω	$\pm 3\%$	$\pm 5\%$	$\pm 10\%$	5000	5000	10,000	10,000	300	<20 (10 ppm typical)	500	

*To apply up to 10 kV at 10 M Ω , set the 1 M Ω decade to its "10" position.

** Tested at low voltages except 10 M Ω at 20 V, 1 G Ω at 100 V, ≥ 10 G Ω at 1000 V



HRRS 4-Decade High-Voltage Substituter



HRRS 9-Decade High-Voltage Substituter



IET LABS, INC. in the **GenRad** Tradition

TEL: (516) 334-5959 • FAX: (516) 334-5988 • Email info@ietlabs.com

www.ietlabs.com

1.888.610.7664



www.calcert.com

sales@calcert.com

High-Resistance High-Voltage Decade Substituter

HRRS 5kV and 10kV Series

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SPECIFICATIONS (CONTINUED)

Mechanical

Model	Dimensions (behind panel)	Weight (nominal)
3-4 Decade Benchtop & Rackmount	43.2 cm W x 13.33 cm H x 13.46 cm D (17" x 5.25" x 5.3")	3.4 kg (7.5 lbs)
5-6 Decade Benchtop & Rackmount	43.2 cm W x 22.2 cm H x 16.38 cm D (17" x 8.75" x 6.45")	5 kg (11 lbs)
7 Decade Benchtop	48.26 cm W x 22.2 cm H x 16.38 cm D (19" x 8.75" x 6.45")	5 kg (11 lbs)
7 Decade Rackmount	43.2 cm W x 30.22 cm H x 16.38 cm D (17" x 11.9" x 6.45")	7.7 kg (17 lbs)

Zero resistance

<3 mΩ per decade

Environmental conditions

Operating Conditions: 10°C to 40°C; <50% RH

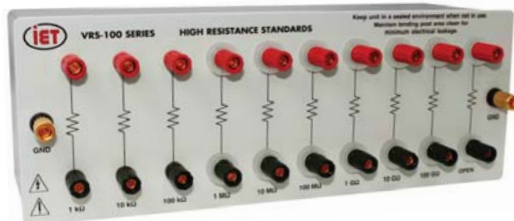
Storage conditions: -40°C to 70°C

Terminals

Two five-way binding posts on 2 special, low-leakage, Kel-F insulating sockets, and one metal ground binding post electrically connected to the case

ORDERING INFORMATION

Model	Total resistance	Number of decades	Resolution
HRRS*-3-10k-**	11.1 MΩ	3	10 kΩ
HRRS*-3-100k-**	111 MΩ	3	100 kΩ
HRRS*-3-1M-**	1.11 GΩ	3	1 MΩ
HRRS*-3-10M-**	11.1 GΩ	3	10 MΩ
HRRS*-3-100M-**	111 GΩ	3	100 MΩ
HRRS*-3-1G-**	1.11 TΩ	3	1 GΩ
HRRS*-3-10G-**	11.1 TΩ	3	10 GΩ
HRRS*-4-1k-**	11.11 MΩ	4	1 kΩ
HRRS*-4-10k-**	111.1 MΩ	4	10 kΩ
HRRS*-4-100k-**	1.111 GΩ	4	100 kΩ
HRRS*-4-1M-**	11.11 GΩ	4	1 MΩ
HRRS*-4-10M-**	111.1 GΩ	4	10 MΩ
HRRS*-4-100M-**	1.111 TΩ	4	100 MΩ
HRRS*-4-1G-**	11.11 TΩ	4	1 GΩ
HRRS*-5-100-**	11.111 MΩ	5	100 Ω
HRRS*-5-1k-**	111.11 MΩ	5	1 kΩ
HRRS*-5-10k-**	1.111 GΩ	5	10 kΩ
HRRS*-5-100k-**	11.111 GΩ	5	100 kΩ
HRRS*-5-1M-**	111.11 GΩ	5	1 MΩ
HRRS*-5-10M-**	1.111 TΩ	5	10 MΩ
HRRS*-5-100M-**	11.111 TΩ	5	100 MΩ
HRRS*-6-10-**	11.111 MΩ	6	10 Ω
HRRS*-6-100-**	111.111 MΩ	6	100 Ω
HRRS*-6-1k-**	1.111 GΩ	6	1 kΩ
HRRS*-6-10k-**	11.111 GΩ	6	10 kΩ
HRRS*-6-100k-**	111.111 GΩ	6	100 kΩ
HRRS*-6-1M-**	1.111 TΩ	6	1 MΩ
HRRS*-6-10M-**	11.111 TΩ	6	10 MΩ



HRRS High-Voltage Substituter customized as a series of independent standards within single housing

Model	Total resistance	Number of decades	Resolution
HRRS*-7-10-**	111.111 MΩ	7	10 Ω
HRRS*-7-100-**	1.111 GΩ	7	100 Ω
HRRS*-7-1k-**	11.111 GΩ	7	1 kΩ
HRRS*-7-10k-**	111.111 MΩ	7	10 kΩ
HRRS*-7-100k-**	1.111 TΩ	7	100 kΩ
HRRS*-7-1M-**	11.111 TΩ	7	1 MΩ
HRRS*-8-10-**	1,111.111 MΩ	8	10 Ω
HRRS*-8-100-**	11.111 GΩ	8	100 Ω
HRRS*-8-1k-**	111.111 GΩ	8	1 kΩ
HRRS*-8-10k-**	1,111.111 MΩ	8	10 kΩ
HRRS*-8-100k-**	11.111 TΩ	8	100 kΩ
HRRS*-9-10-**	11,111.111 MΩ	9	10 Ω
HRRS*-9-100-**	111.111 GΩ	9	100 Ω
HRRS*-9-1k-**	1,111.111 GΩ	9	1 kΩ
HRRS*-9-10k-**	11,111.111 MΩ	9	10 kΩ

*To specify accuracy grade, replace * with "Q," "B," or "F" as required.

**To specify voltage, replace ** with either "5kV" or "10kV."

Options

-RM: Rack mountable case for standard 19" rack

-K: Kelvin-type 4-terminal posts

-RO: Rear output



A series of HRRS High-Voltage Substituter Standards customized as a single decade.



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